Chapter 17
Vector Borne Diseases and Climate Change

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ABSTRACT

The incidence of emergence diseases including vector borne diseases, water diseases, and some physiologic impairment is considered sensitive to climate. Malaria, leishmaniasis, dengue, and viral encephalitis are among those diseases most influenced by climate. Variation in the incidence of vector borne diseases is associated with extreme weather events and annual changes in weather conditions. Africa in general and Morocco in particular are designated as an area of significant impact by numerous the Intergovernmental Panel on Climate Change (IPCC) reports and notably susceptible to such drastic climate-related health consequences. Climatic parameter change would directly affect disease transmission by acting on the vector’s geographic range, activity, or reproduction and by reduction the period of pathogen incubation. This chapter will discuss the increasing risk of some vector-borne diseases in hazard-prone localities. It further identifies the severe challenges both of health adaptation to climate change by highlighting Moroccan adaptive capacity to such crises.

DOI: 10.4018/978-1-5225-7775-1.ch017
INTRODUCTION

Climate change is affecting ecosystems and may have direct or indirect effects on human and animal health. This change affects the distribution and abundance as well as the spatial dynamics of vector species and reservoirs, which in turn disrupts ecosystem composition, vector and reservoir reproduction cycles. Climate change also acts on viruses, bacteria or parasites pathogens, forcing a selection of populations better adapted to environmental conditions (Bounoua et al., 2013).

Climate-related increases in sea surface temperature and sea level can lead to higher incidence of water-borne infectious and toxin-related illnesses, such as cholera and shellfish poisoning (Patz et al., 1996). Focusing on Moroccan outlook, the main diseases considered as health problems and may be aggavrate by climate change, such malaria, bilharzia, typhoid, leishmaniasis, dengue and cholera, especially among the most vulnerable groups. Human migration and damage to health infrastructures from the projected increase in climate variability could indirectly contribute to disease transmission (Patz et al., 1996).

Climatic parameters influence the apparition, emergence and reemergence of infectious diseases, in addition to multiple human, biological, and ecological determinants. Changing environmental conditions caused by climate change, often have a negative impact on the life cycle of vector/reservoir populations, by modifying their behavior and areas inhabited by migrating host species and, consequently, on epidemiology of disease. Some vector and reservoir species may disappear, others may become more abundant. In this optic, climate change is expected to affect the distribution and prevalence of vector-borne diseases such as Leishmaniasis and Malaria, as well as waterborne diseases such as Schistosomiasis or cholera. These neglected diseases still ravage lives covertly in the world (WHO, 2012a).

In Morocco, infectious diseases such Leishmaniasis, Malaria and Schistosomiasis are still a public health problem that may be more complicated by climate change. Despite the domestic program to fight against these parasitic diseases, currently, the kingdom is aware to all socioeconomic problems that may be link to health population damage.

Moroccan Ministry of Health (MMH) (MMH, 2014), declared about 2086 cases of Malaria imported between 2005 and 2014. The risk of autochthonous malaria resumption is important in Morocco because of the possible presence of gametocytes carriers in the last malaria focus (Faraj et al., 2008). Leishmaniasis shows significant increase in the number of recorded cases during the last couple of years (Kahime et al., 2014). 43163 cases of leishmaniasis – 41867 cases of Cutaneous Leishmaniasis against 1296 cases of Visceral Leishmaniasis – were recorded between 2005 and 2014 by MMH(MMH, 2014). While, for schistosomiasis, 39 cases were reported in Morocco between 2005 and 2014(MMH, 2014).

For all these diseases, the emergence/reemergence, the outbreaks remain sensitive to climate factors, as well as to the local disease control and monitoring that influence disease trends. In the other hand, Factors such as social economics, health-seeking behavior, geographical location, and population growth will determine the vulnerability of populations to climate change (Githeko et al., 2000).

In this chapter, we aims to highly some sensitive diseases to climate change in Morocco.